

# Polar-Orbiting Product Applications

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# Agenda

- NOAA and SSD Mission
- Major Customers
- Current and Future POES  
Product Applications

# Mission

- **NOAA's Mission:**

To understand and predict changes in Earth's environment and manage coastal and marine resources to meet our Nation's economic, social and environmental needs

- **SSD's Mission:**

To provide real-time global satellite products, interpretive analyses and other information from polar-orbiting and geostationary satellites to a diverse user community for environmental assessment, prediction and stewardship.

# Major Customers

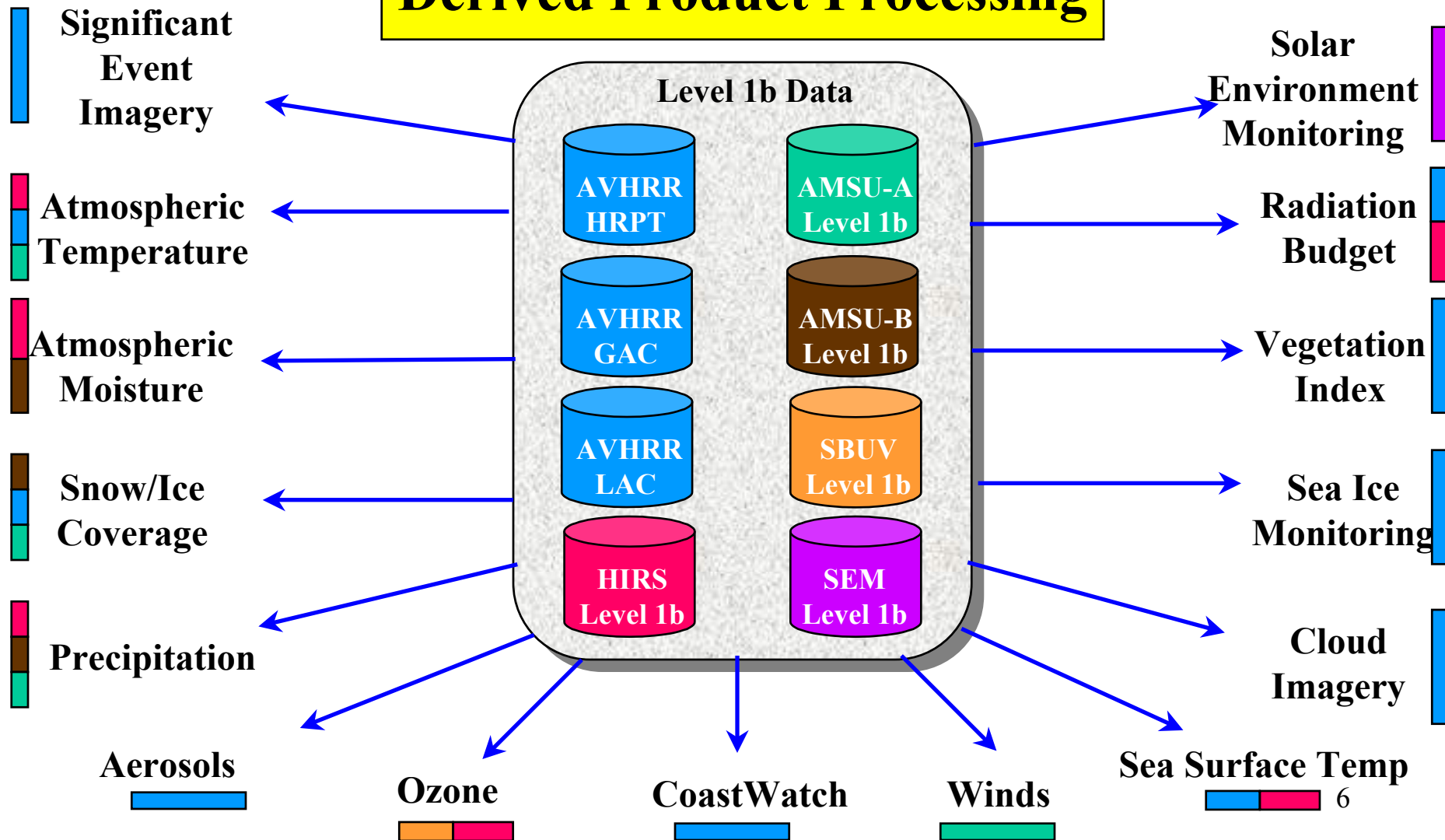
- **Numerical Weather Prediction Centers**
  - National Centers for Environmental Prediction (NCEP)
  - Joint Center for Satellite Data Assimilation (JCSDA) -- NOAA, NASA & DoD
  - FNMOC, ECMWF, UK Met Office, Meteo France, Japanese Met. Service
- **National Weather Service**
  - Forecast Field Offices (AWIPS - Advanced Weather Interactive Processing Sys)
  - River Forecast Centers (RFC)
  - Alaskan VAAC
- **NOAA Coast Watch** (six regional nodes); **Ocean Watch** (N Pacific Demo)
- **Other U.S. Federal Government Agencies**
  - Dept of Defense (Joint Typhoon Warning Center)
  - Dept of Interior
  - Dept. of Agriculture
  - Federal Aviation Administration (FAA)
  - EPA
- **Global Climate Community**

# INSTRUMENTS

- AVHRR- Imaging radiometer
- HIRS - Infrared sounder
- AMSU-A - Microwave sounder
- AMSU-B - Microwave humidity sounder
- SBUV - Ozone instrument
- SEM - Space environment instrument
- DCS - Data collection system
- SARSAT - Search and rescue system

# DATA to PRODUCTS

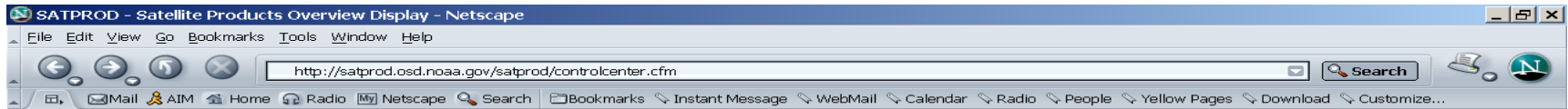
## Derived Product Processing



# Current Products

## Satellite Products (SATPROD)

<http://satprod.osd.noaa.gov/satprod/controlcenter.cfm>



[Help](#)  
[Glossary](#)

[Consolidated Product List](#)  
[Measurement Categories](#)  
[POPS And Users](#)  
[Platforms](#)  
[\(NOAA-only\)](#)  
[Processing Systems](#)  
[\(NOAA-only\)](#)  
[Quick Reference](#)

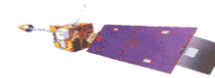
[Flowcharts](#)  
[Links And Resources](#)  
[Contact Us](#)

[Request A New Product or Service](#)  
(government and military only)  
(WORD format)  
(Word Perfect format)

[\[NOAA Privacy Policy\]](#)



### NESDIS Satellite Product Overview Display Control Center



[Satellites](#)

[Instruments](#)

[Product Groups](#)

[Products](#)



[National Oceanic And Atmospheric Administration](#)  
[National Environmental Satellite, Data, and Information Service](#)

# Current Products

## SATPROD Website

24 Satellites

Sensors

Product Groups

[Return to Control Center](#)

**NESDIS Satellite Product Overview Display**

**1. Select a Satellite**

Satellite	Orbit Time	Status
<a href="#">Aqua</a>	-----	Operational
<a href="#">DMSP F-12</a>	09:13	Secondary Ops
<a href="#">DMSP F-13</a>	05:40	Operational
<a href="#">DMSP F-14</a>	08:42	Secondary Ops
<a href="#">DMSP F-15</a>	09:45	Operational
<a href="#">DMSP F-16</a>	-----	Operational
<a href="#">Earth Probe</a>	-----	Operational
<a href="#">ERS-1</a>	-----	Operational
<a href="#">ERS-2</a>	-----	Operational
<a href="#">GMS-5</a>	-----	Deactivated
<a href="#">GOES-10</a>	NA	Operational
<a href="#">GOES-11</a>	NA	Standby
<a href="#">GOES-12</a>	NA	Operational
<a href="#">GOES-9</a>	-----	Operational
<a href="#">Meteosat-5 (INDOEX)</a>	-----	Operational
<a href="#">Meteosat-7</a>	NA	Operational
<a href="#">NOAA-12</a>	04:46	Standby
<a href="#">NOAA-14</a>	08:06	Standby
<a href="#">NOAA-15</a>	06:22	Standby
<a href="#">NOAA-16</a>	14:24	Operational
<a href="#">NOAA-17</a>	10:24	Operational

**2. Select an Instrument for NOAA-16**

Instrument	Status
<a href="#">AMSU-A1</a>	Marginal
<a href="#">AMSU-A2</a>	Operational
<a href="#">AMSU-B</a>	Marginal
<a href="#">AVHRR/3</a>	Marginal
<a href="#">HIRS/3</a>	Operational
<a href="#">S&amp;R (POES)</a>	Marginal
<a href="#">SBUV/2</a>	Marginal
<a href="#">SEM (POES)/2</a>	Operational

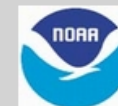
**Product Groups**

- [Imagery \(HRPT\)](#)
- [Imagery \(POES\)](#)
- [Mercator Images \(IMAGES\)](#)
- [Oil Spills \(OSEI\)](#)
- [OLR AVHRR \(RBPGR\)](#)
- [PATMOS Aerosol](#)
- [POES Archive](#)
- [Polar Stereographic Images \(IMAGES\)](#)
- [Scenes \(RBPGR\)](#)
- [Sea Ice \(SIMS\)](#)
- [Sea Surface Temperature \(OSEI\)](#)
- [Sea Surface Temperature \(SST\)](#)
- [Severe Weather \(OSEI\)](#)
- [Snow and Ice Cover \(IMS\)](#)
- [Snow/Ice Storms \(OSEI\)](#)
- [SST Enhanced Imagery](#)
- [Surface Parameters \(ATOVS\)](#)
- [Tropical Events \(OSEI\)](#)
- [Vegetation Condition](#)
- [Vegetation Index \(GVI2\)](#)
- [Vegetation Index \(GVI3\)](#)
- [Visible and IR Composites](#)
- [Volcano Detection \(OSEI\)](#)

Select a product group to see details about it



## NESDIS Satellite Product Overview Display



## 1. Products

Snow Depth Mapped (SSM/I)  
Snow Depth Orbital (MSPPS)  
Snow Depth Orbital (SSM/I)  
Snow Water Equivalent (MSPPS)  
Snow Water Equivalent (SSM/I)  
Soil Moisture Mapped (SSM/I)  
Soil Moisture Orbital (SSM/I)  
Soil Wetness Index Daily (SSM/I)  
Soil Wetness Index Pentad (SSM/I)  
SPAROS (SIMS)  
SSM/T 1b (PDP)  
SSM/T2 1b (PDP)  
SST Anomalies Daily (POES)  
SST Anomalies Monthly (POES)  
SST Full Disk (GOES)  
SST Global Observations (NAVOCEANO)  
SST Global Observations (NOAA)  
SST Global Scale Analysis 100 km (POES)  
SST Global Scale Analysis 50 km (POES)

### Filter by Measurement Category

— All Measurement Categories —

See Related Web Site

See Products just for a particular satellite system:

### Select Satellite System

Product: SST Global Scale Analysis 50 km (POES)

Measurement Category: Sea Surface Temperature

Coverage: **Global**

Units: degrees C

Horizontal Resolution: **50 km**

Vertical Resolution: N/A

Dataset Name:

Format: **ASCII, NetCDF, Contour Charts**

POP: OPOP

**See Related Web Site**

Grid Size:

Accuracy: **0.5 deg C**

Frequency: **Daily**

Producing System: SST

Product shows global (resolution 50-km) sea surface temperatures in degrees C. It is a composite gridded-image derived from 1 km resolution Global SST Observations and is generated daily on a global scale. SST is defined as the skin temperature of the ocean surface water.

File Edit View Favorites Tools Help

Address  <http://www.osdpd.noaa.gov/PSB/EP5/SST/SST.html>

Google Search Web 36 blocked AutoFill Options



## NOAA Satellites and Information

National Environmental Satellite, Data, and Information Service

Information Processing Division

Product Systems  
DivisionComputer Operations  
Branch

CLASS

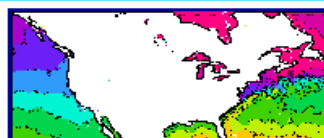
Office of Satellite Data  
Processing & Distribution

<http://www.osdpd.noaa.gov/PSB/PSB.html>

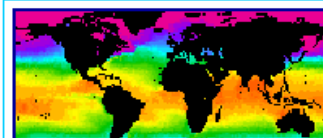
## Welcome to the Environmental Product System's Ocean Page

## Top Sites

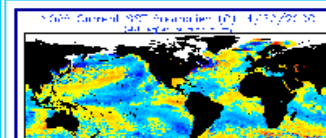
[Sea Surface Temperature Contour Charts](#)  
(14-100km resolution)



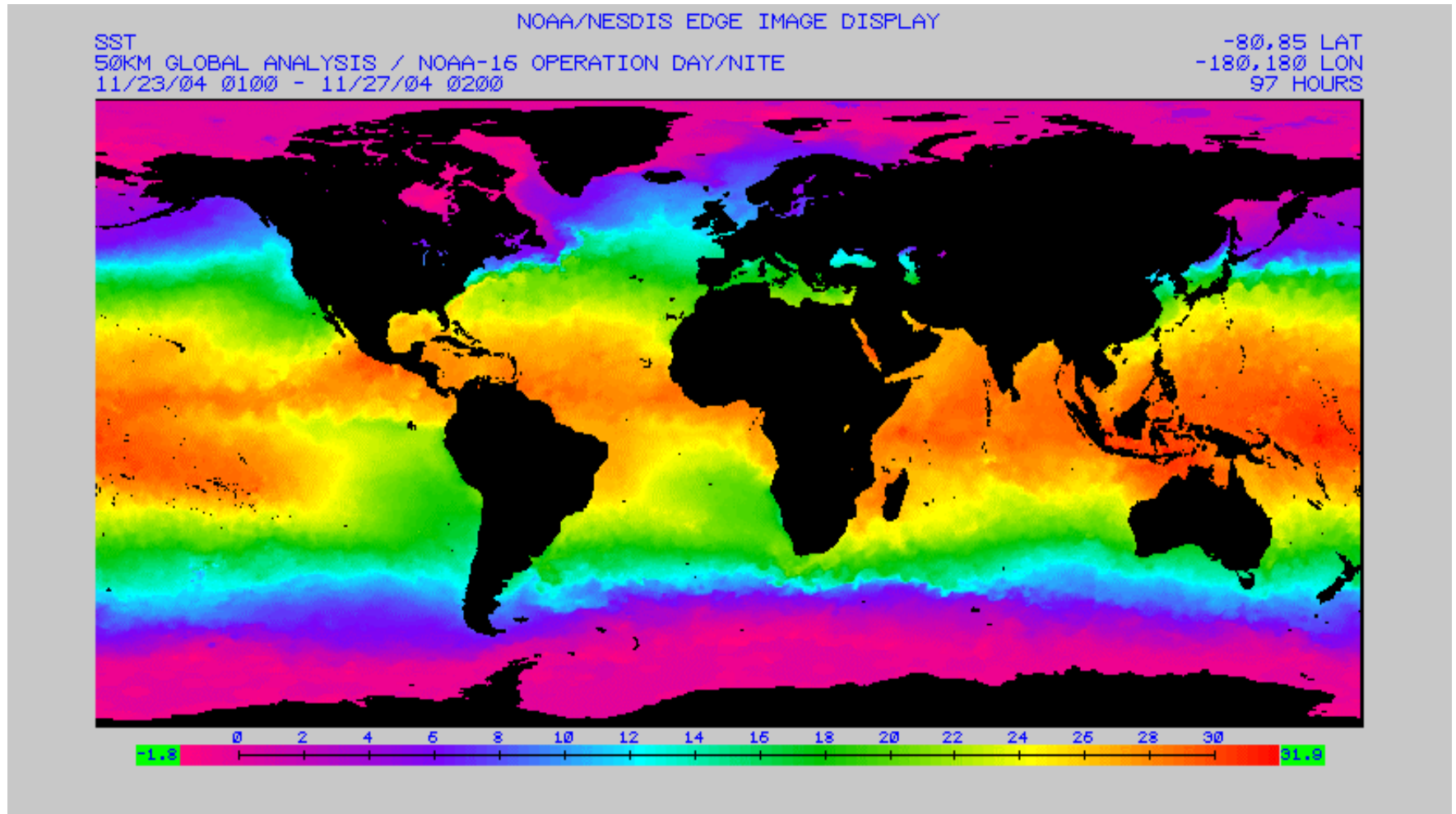
Sea Surface Temperature  
Analyzed Fields  
(14-100km resolution)



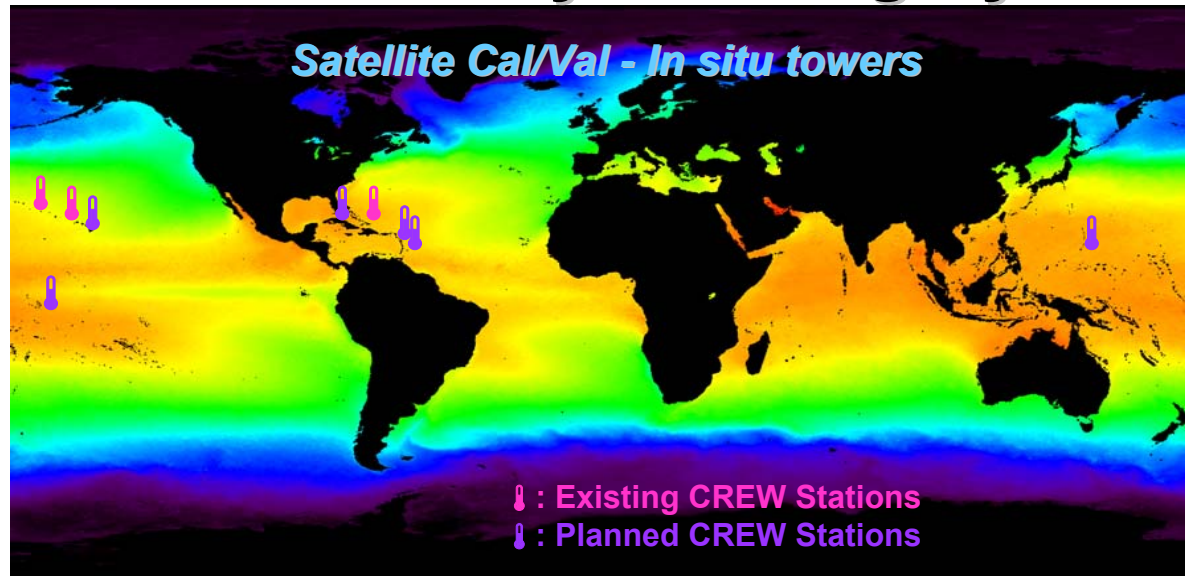
[Sea Surface Temperature  
Anomaly Imagery](#)  
(get the latest El Nino/La Nina  
information)



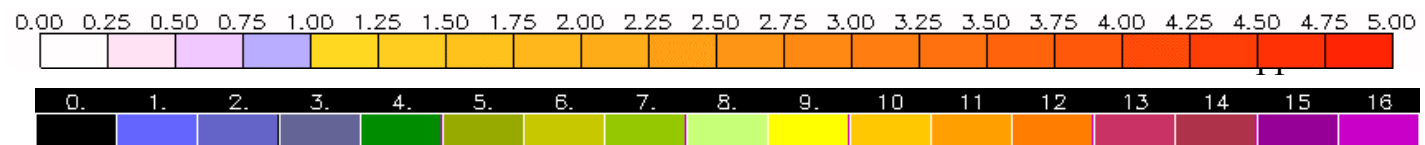
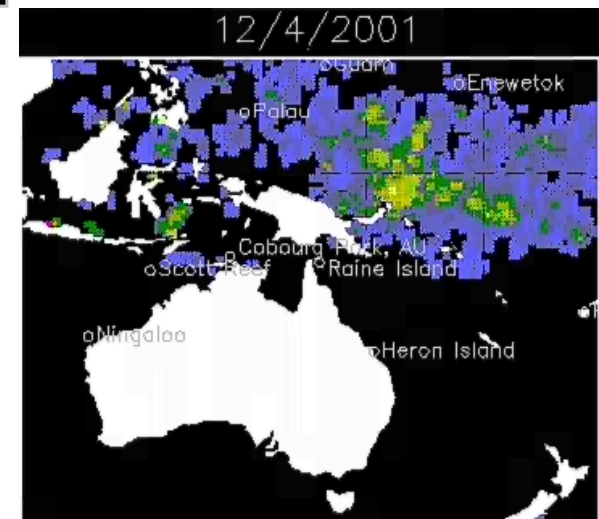
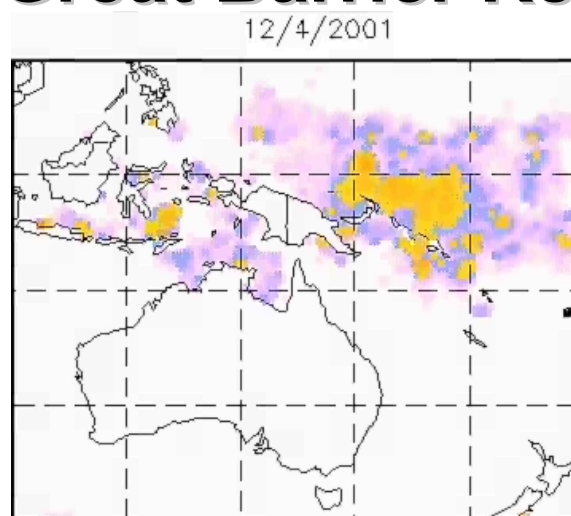
# Sea Surface Temperature



# Coral Reef Early Warning System



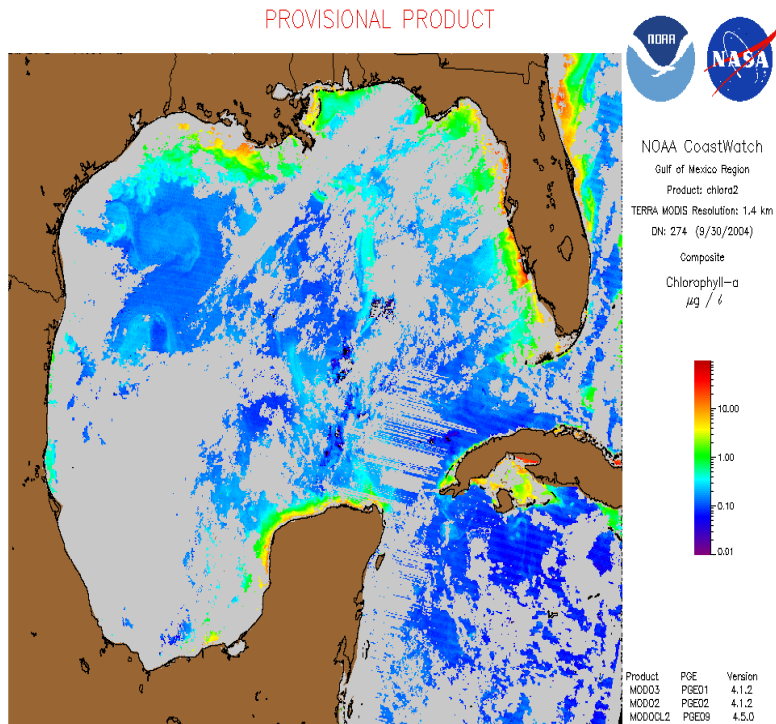
## Bleaching Event: Great Barrier Reef





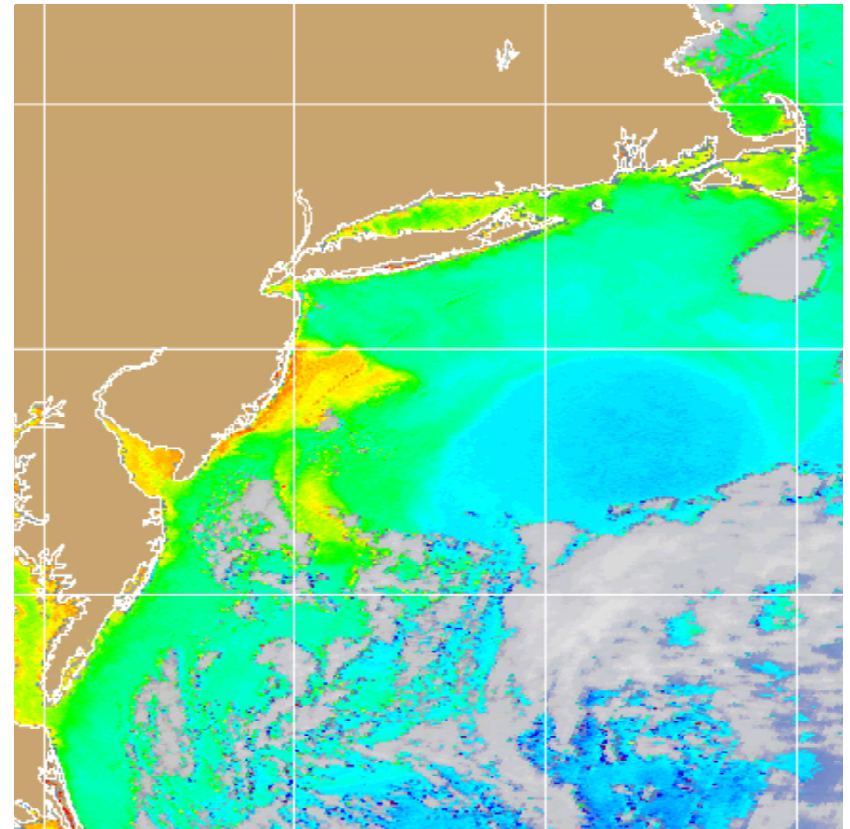
# Ocean Color

## Chlorophyll-a from MODIS Sep 30, 2004

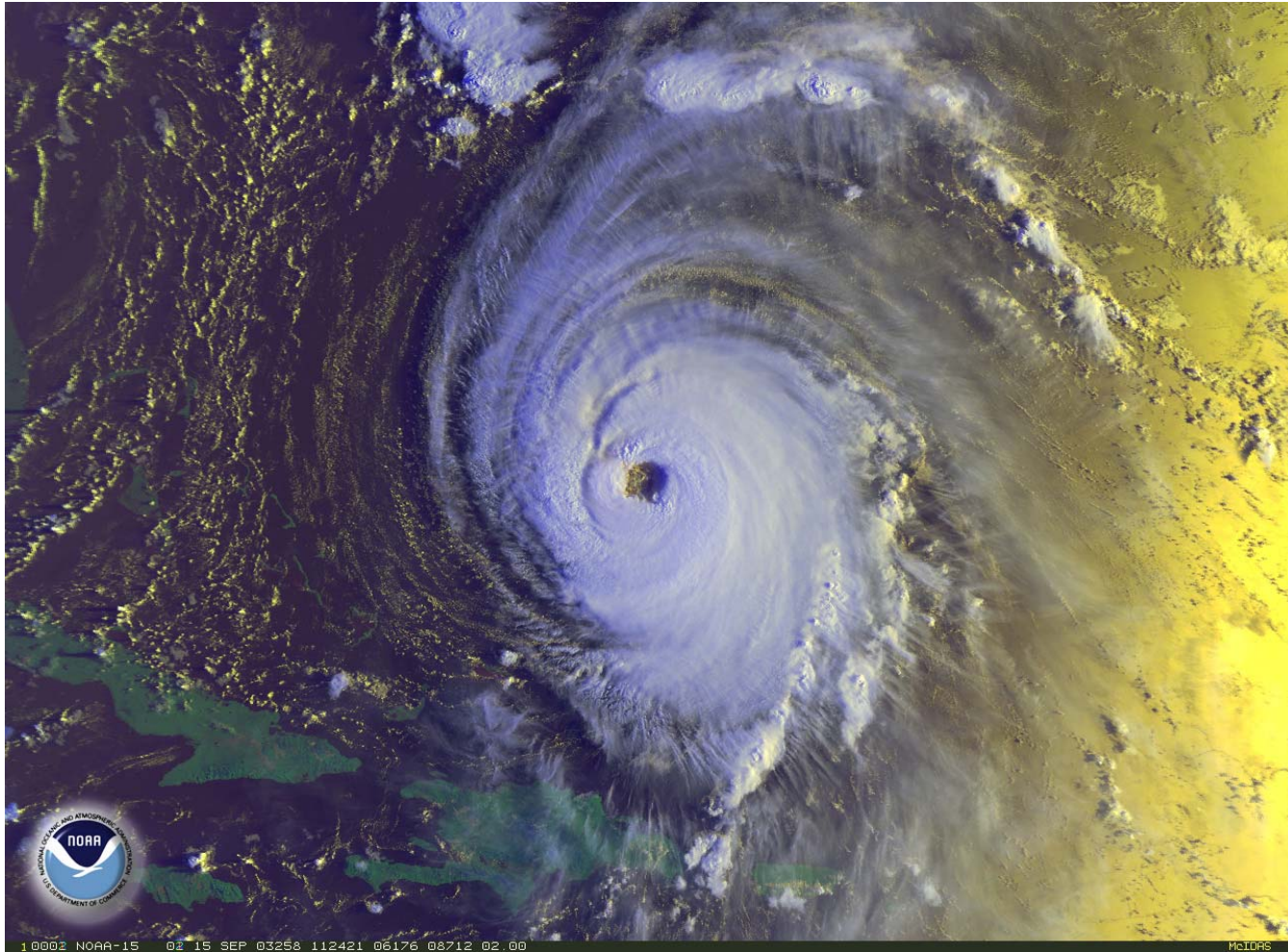


TERRA/AQUA MODIS ocean products available via NOAA CoastWatch are presently generated using NASA atmospheric, thermal, and bio-optical algorithms (quality <=2). These products should be considered provisional and subject to change without notice. Differences between NOAA generated near real-time products and NASA produced science quality datasets are being investigated.

## Harmful Algal Bloom 22 Aug 2001



# Operational Significant Event Imagery (OSEI)



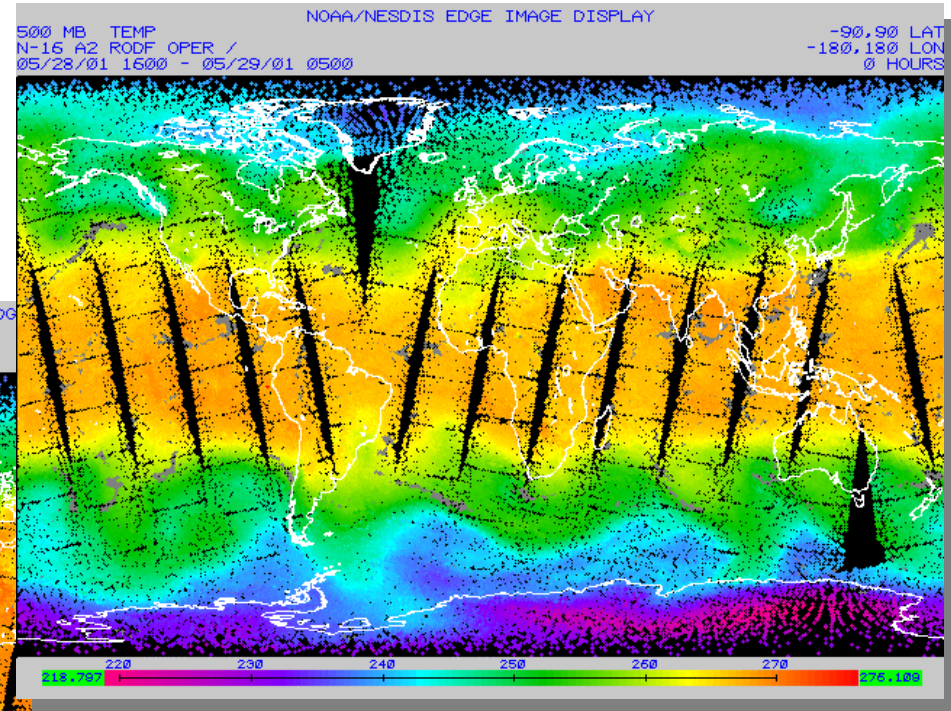
Hurricane Isabelle (Sept 15, 2003) N-15 AVHRR CH's 1,2,4 13



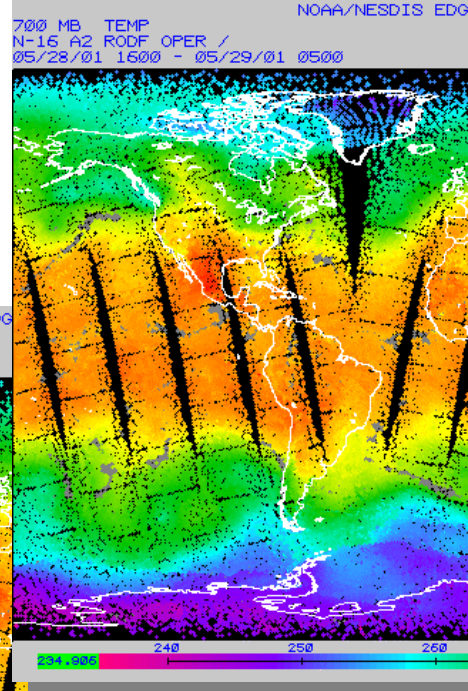
# TEMPERATURE FIELDS

## HIRS-3/AMSU-A

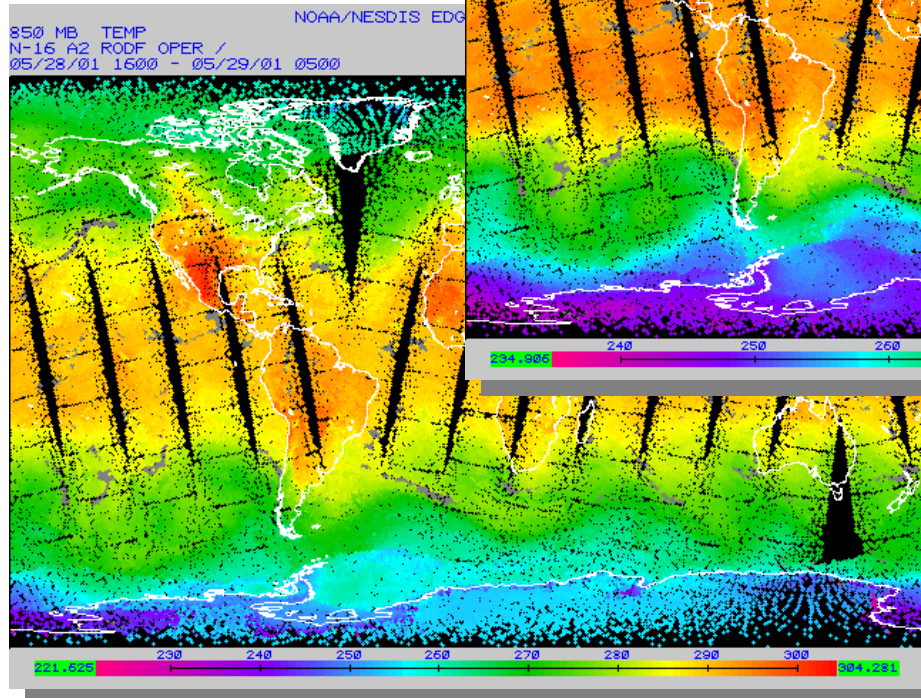
500mb – 5500m



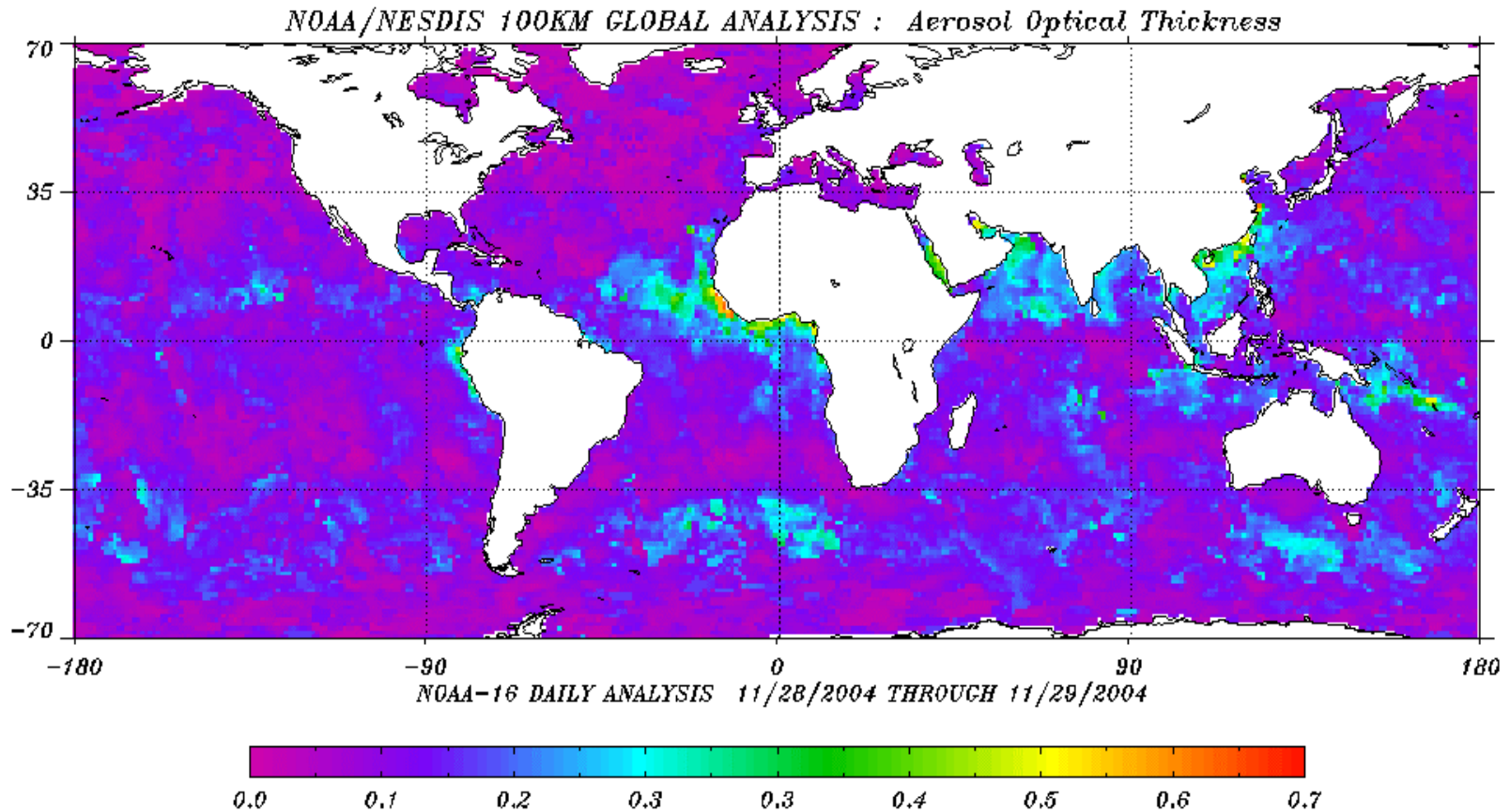
700mb – 3000m



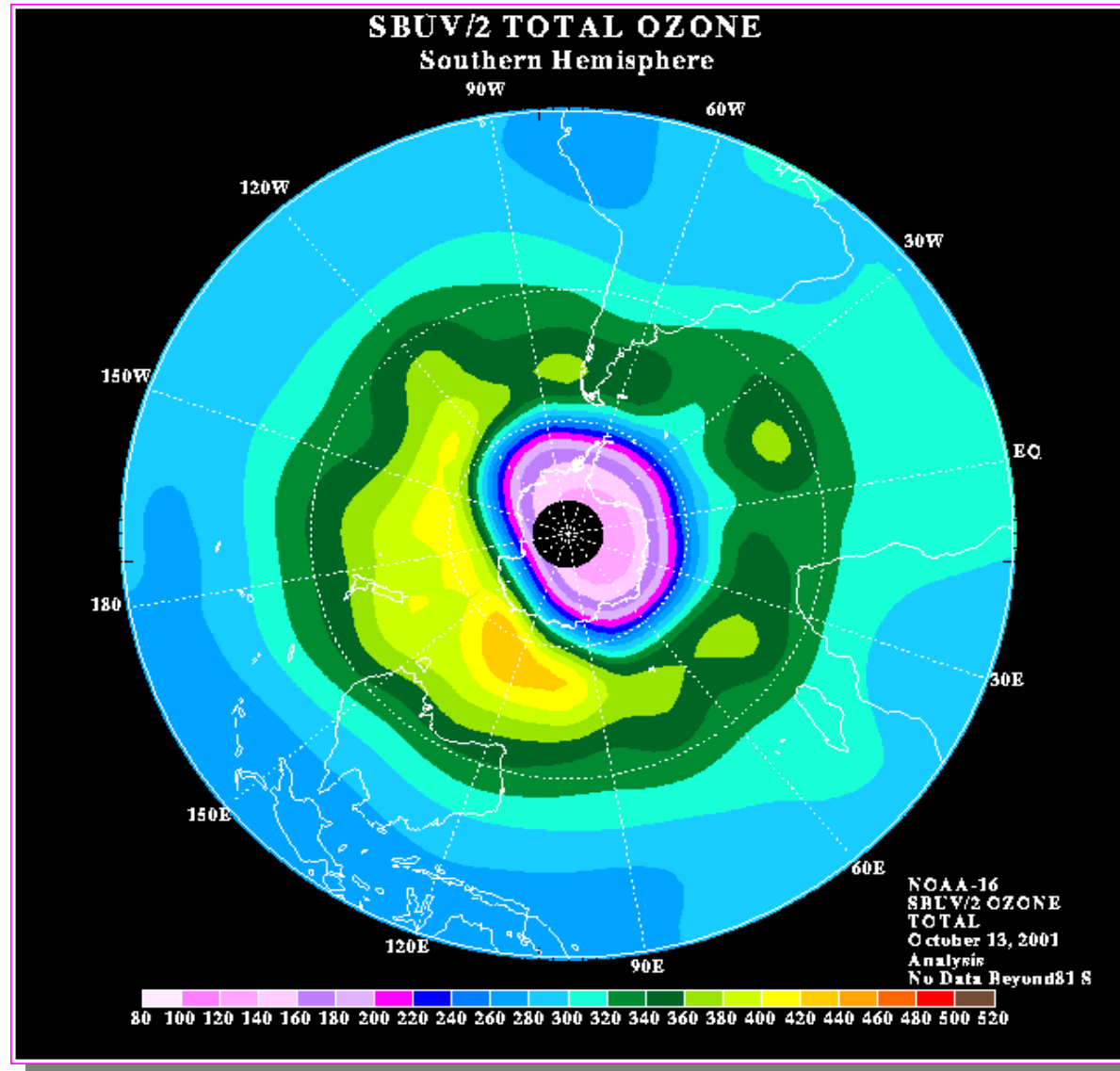
850mb – 1500m



# Aerosols



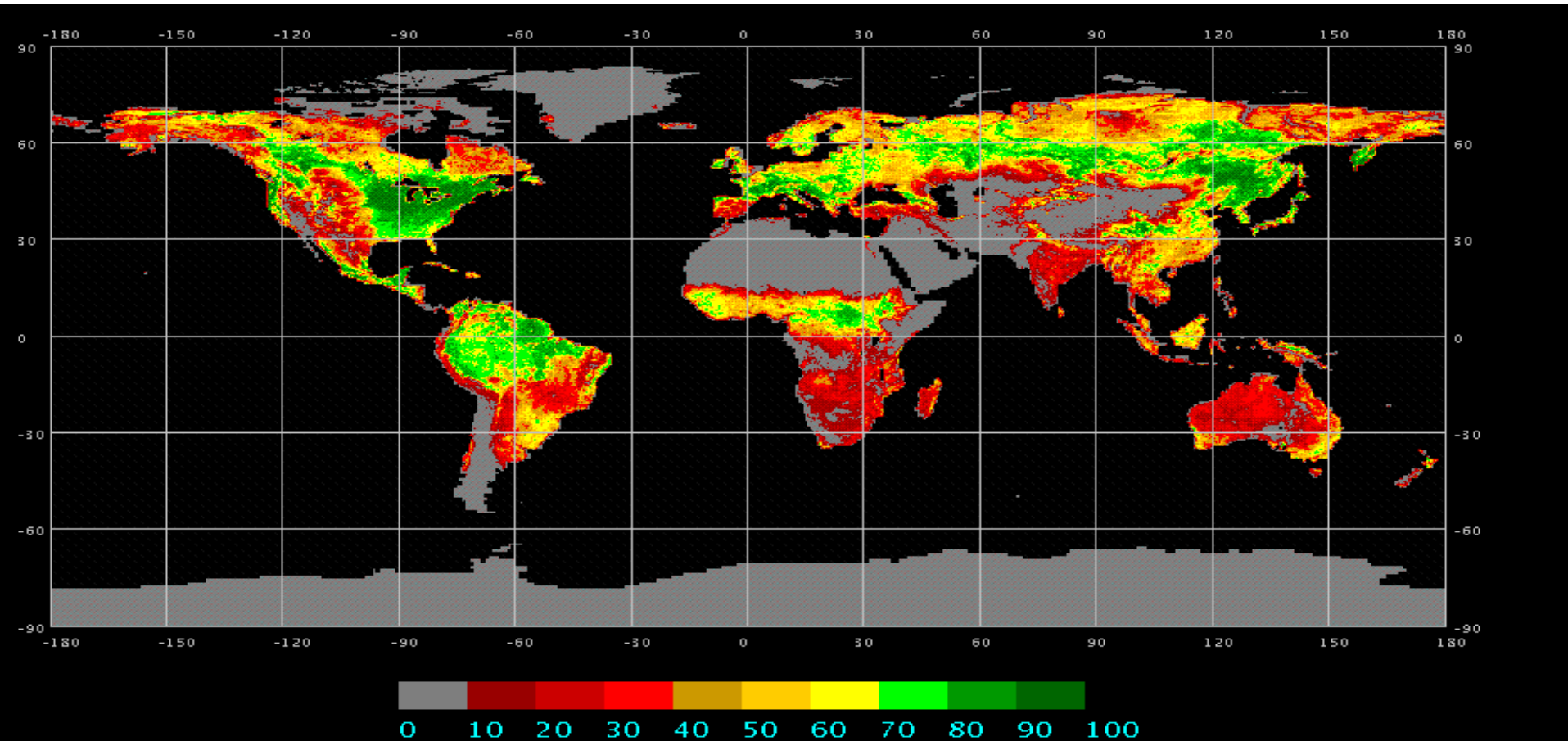
# Total Ozone





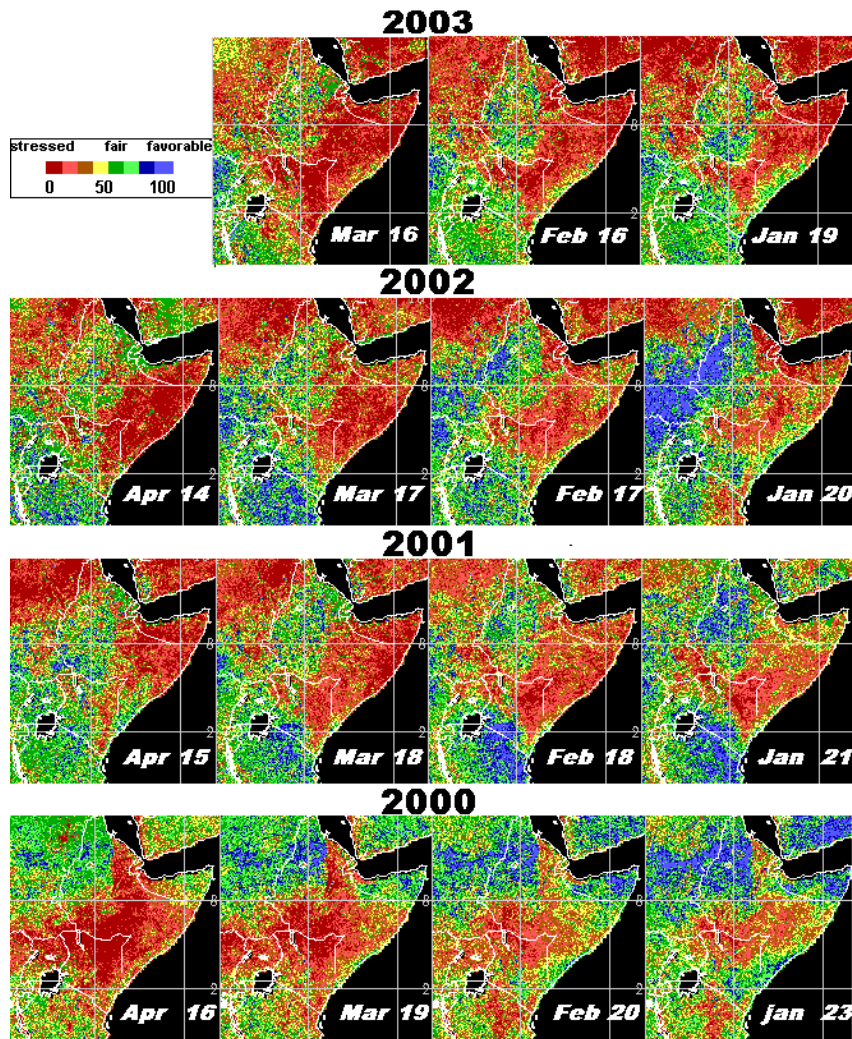
# Green Vegetation Fraction

(Derived from AVHRR NDVI Product)



g00032.GVF.by2 2000 Week 32

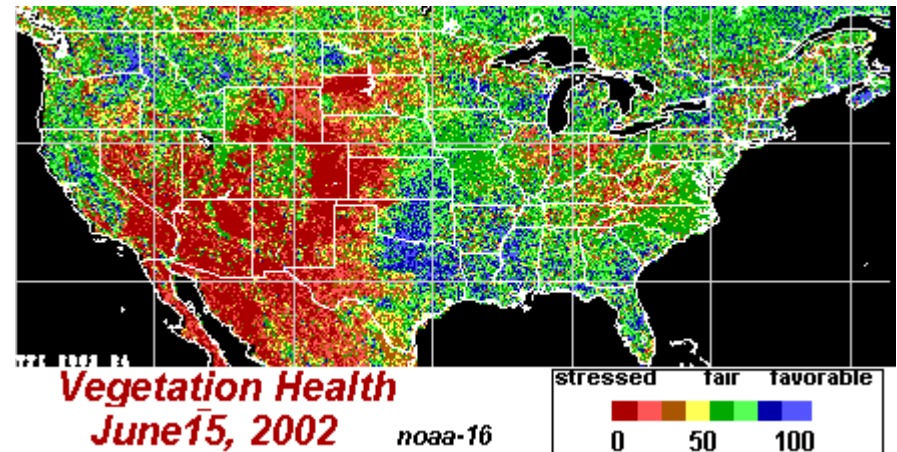
# Drought/Vegetation Health



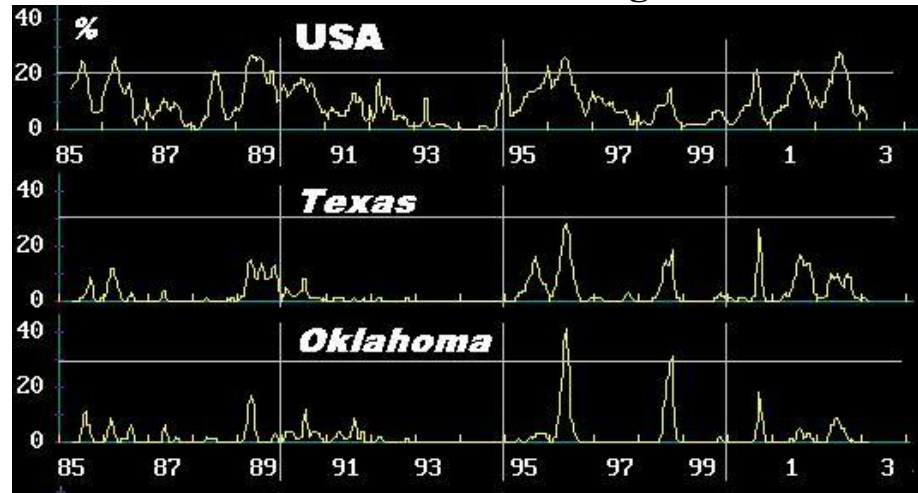
**Intensive vegetation stress 2000-2003**

**HORN of AFRICA**

AVHRR from NOAA-14 & 16



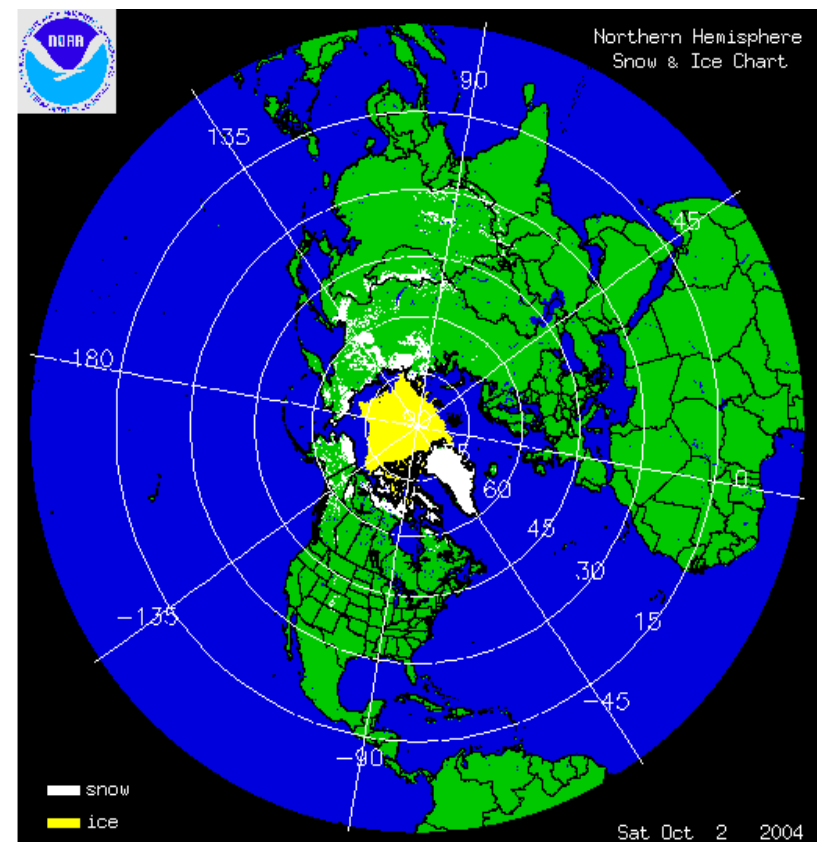
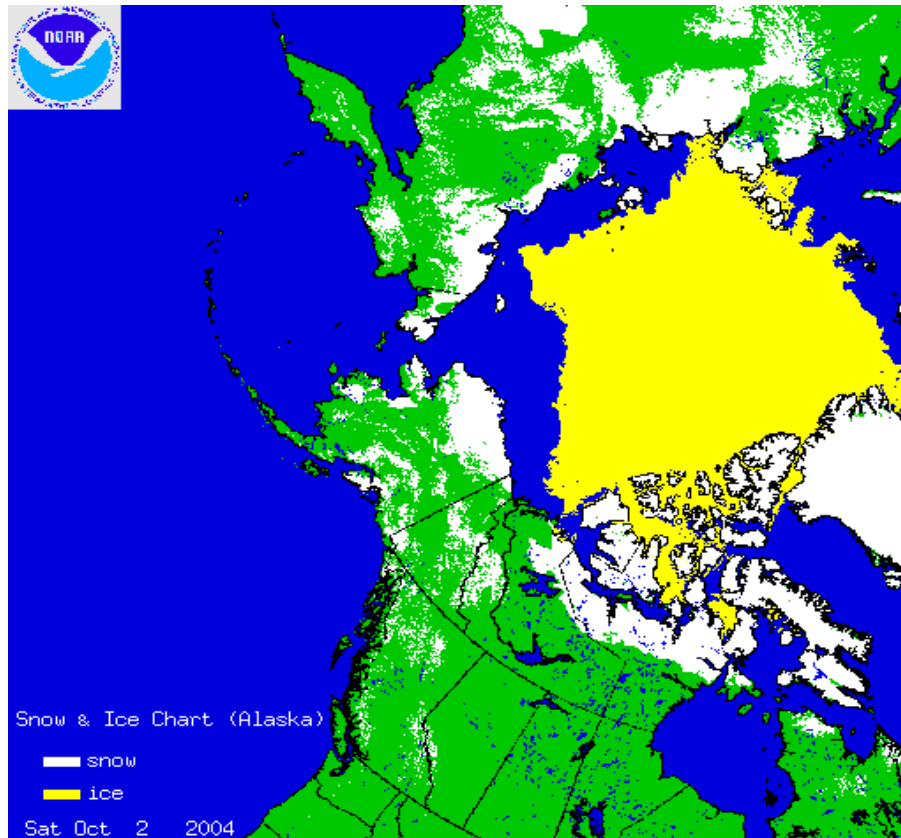
## Time Series of US and State Drought-afflicted Area



Percent of area under stress

# Snow/ Ice Program

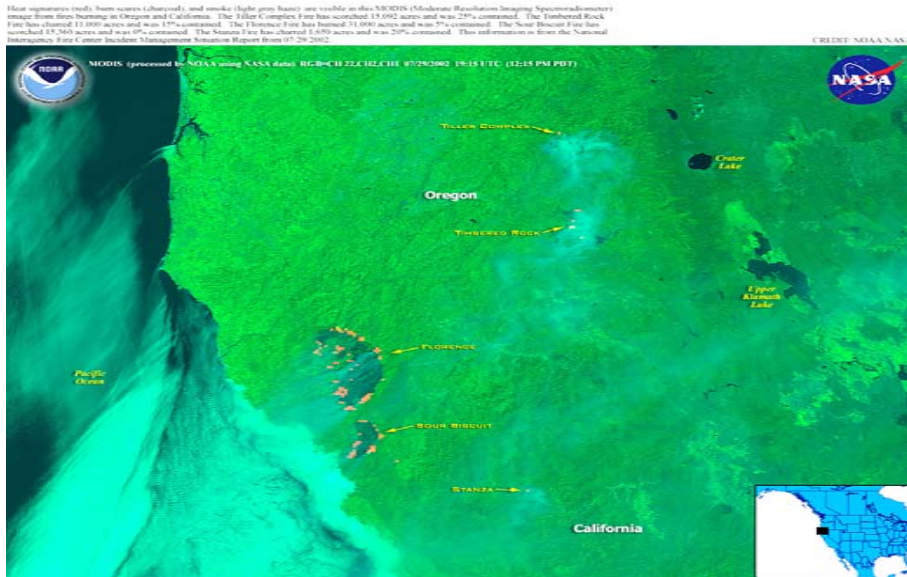
- Interactive Multisensor Snow and Ice Mapping System (IMS)
- Produced once per day (approximately 4 km)
- Used daily as a primary input to several NCEP forecast models





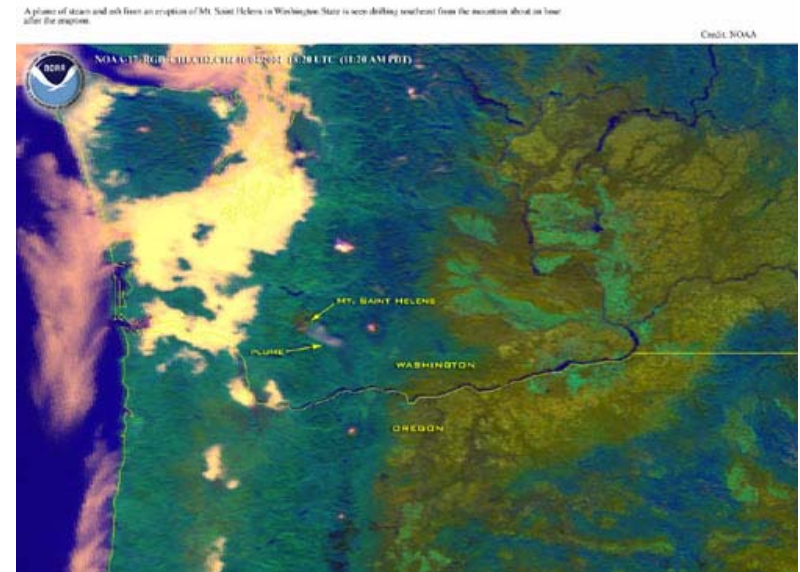
# Hazards Support

## Fire Products



- **Geo-referenced images distributed on Fire Web-GIS page.**

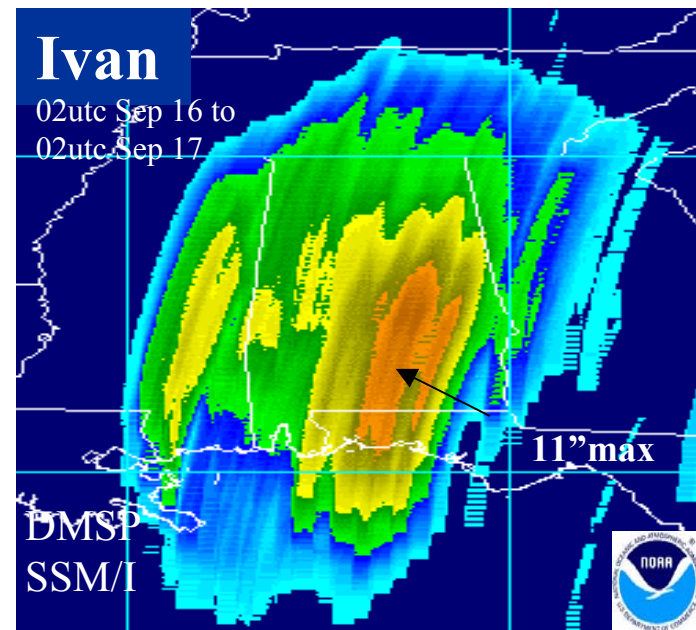
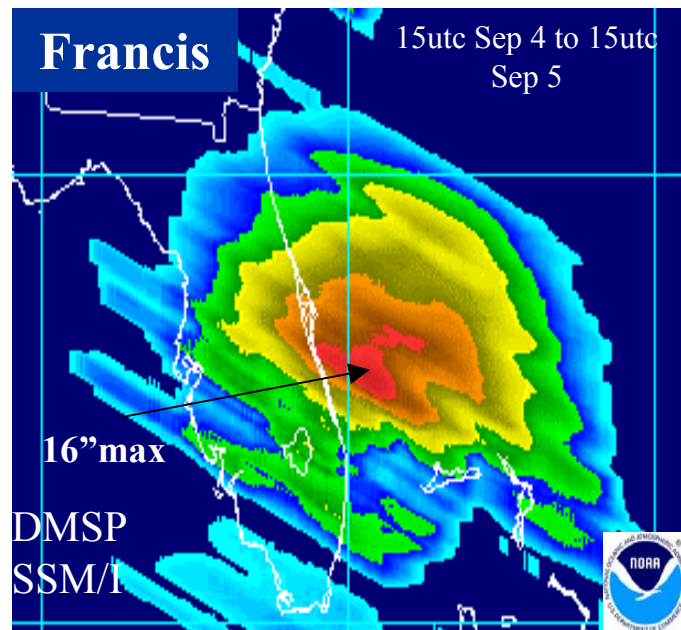
## Volcanic Ash



**Mt Saint Helens 4 Oct 2004  
NOAA-17 Image**

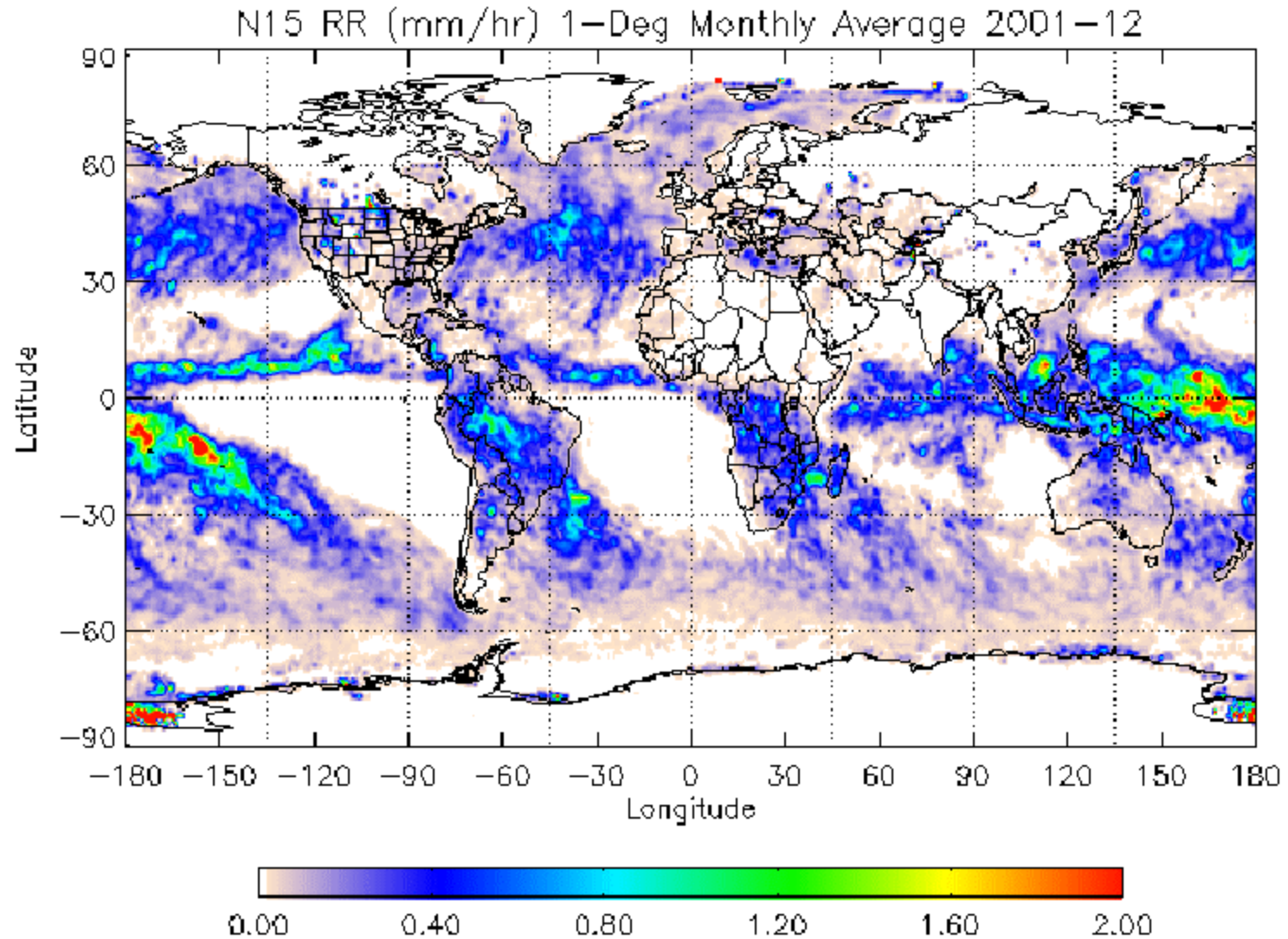
# Tropical Rainfall Potential (TRaP)

- Generated whenever a new tropical storm forecast bulletin or new microwave rain rate data becomes available for a given numbered or named storm.



24 hour forecast of rainfall potential

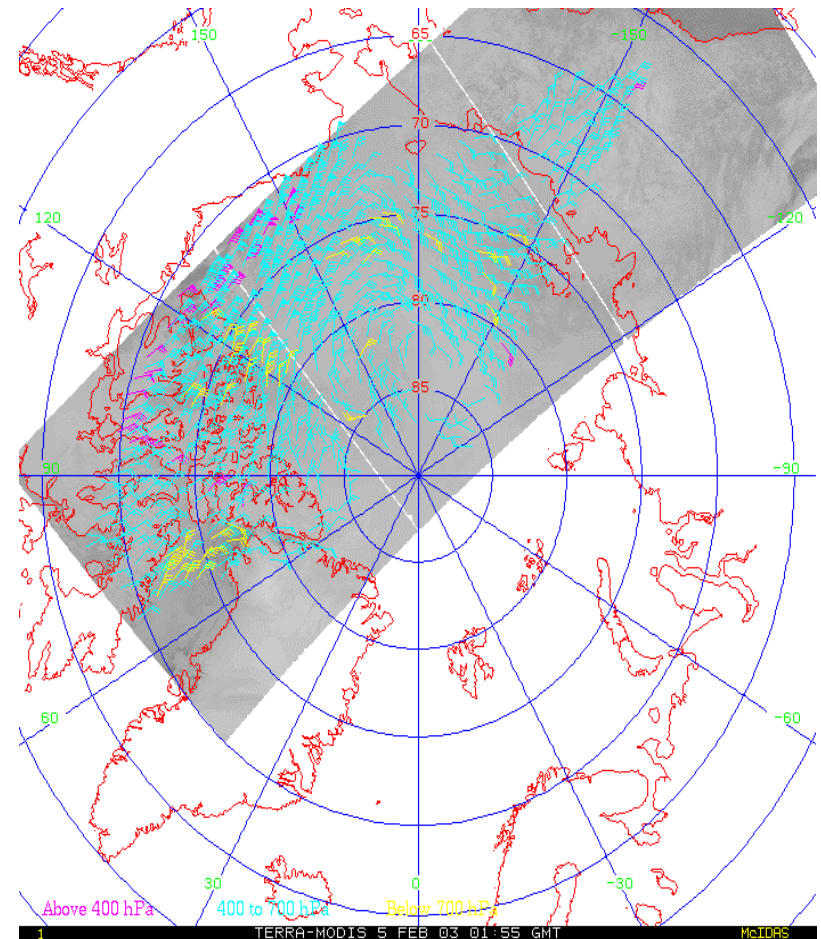
# Monthly Average Rain Rate



# Polar Winds

- Assimilation into numerical weather prediction
  - ECMWF, JMA, CMC, UK Met, FNMOC, NCEP, & others
- Impact: ECMWF reported a fairly large forecast improvement for the northern hemisphere

## MODIS Polar Winds



# **Future Operational Satellites**

## **Improved Product Support**

- Initial Joint Polar System (IJPS) Readiness
  - NOAA-N HIRS-4 and MHS Instruments
  - METOP Instruments (IASI, ASCAT, GRAS, GOME) and global 1 km AVHRR data
- NPP/NPOESS Planning
  - 146 NPOESS product requirements supporting 628 NOAA mission needs



A satellite image of a tropical cyclone, showing a well-defined eye and spiral cloud bands over a dark ocean. The image is slightly faded to allow the text to be read clearly.

Questions

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